

REMARKS/ARGUMENTS

Claims 1-27 and 41-43 will be pending upon entry of the present amendment. Claims 8 and 26 have been amended. Claims 17 and 18 are withdrawn pending allowance of a generic claim.

Applicant thanks the Examiner for indicating the allowability of the subject matter of claims 15, 16, 22, and 41.

Claims 1-13, 15, 16, 19-21, 23-27, 42, and 43 were rejected under 35 U.S.C. § 102(b) as being anticipated by McGowan (U.S. Patent No. 4,297,086), and claim 14 was rejected under 35 U.S.C. § 103(a) as being unpatentable over McGowan.

In the discussion that follows, where text from McGowan is cited, column and line numbers will be indicated by two numbers separated by a colon, e.g., 4:17 to cite column 4, line 17.

Claim 1 recites, in part, “the first and second drive plate assemblies and shaft acting as a substantially solid element when under compression to cancel axial loads generated by the first and second pump/motors through the shaft.” McGowan fails to anticipate this limitation of claim 1. Instead, McGowan teaches a system that does not apply a compressive load to the shaft, and thus the shaft is never under compression, as recited in claim 1. If anything, any axial loads will be expansive, rather than compressive. McGowan teaches a machine in which one pump is operated in motor mode to drive the other in pump mode (2:25-28). This means that, for example, with reference to Figure 1, the piston 24 receives fluid pressure at one end to push the piston toward the other end, simultaneously compressing fluid at the other end. Thus, the fluid pressure in the cylinder to the left of the piston will be substantially equal to the pressure in the cylinder to the right of the piston, and both cylinders will apply axial forces *outward*, i.e., away from the piston. If the valve plates 66 are rigidly coupled to the shaft 46 (this is not clear in McGowan), then the axial forces may cancel each other, but they will do so in a way that is opposite the configuration recited in claim 1. Where claim 1 recites axial load

cancellation “when under compression,” i.e., inward acting forces, any cancellation in McGowan will be while under *expansion*, i.e., outward acting forces. Furthermore, there is no teaching that the shaft receives axial loads of any kind. The presence of woodruff keys 66 coupling the valve plates 66 to the shaft 46 indicates a coupling structure that is not commonly used where axial loads are anticipated, since such joints would tend to slide apart under axial loads. McGowan provides a separate mechanism to balance the mostly axial pressure surrounding the two valve plates, independent of each other (see 6:43-7:19). Clearly, McGowan fails to anticipate claim 1, which is allowable thereover. Dependent claims 2-7 and 41-43 are also allowable.

McGowan fails to anticipate “an actuator mechanism coupled to the first and second pump/motors and configured to control displacement changes of each of the first and second pump/motors such that the displacement of each of the first and second pump/motors remains substantially equal to each other,” as recited in claim 8.

This language is substantially identical to the language of claim 42, which was previously rejected. In rejecting claim 42, the Examiner points to McGowan’s pistons 88 as being analogous to the actuator mechanism of claim 42. However, McGowan explains that the pistons 88 are configured to balance pressure on opposite sides of the valve plates 66 as a means of preventing fluid leakage (see 7:5-20). There is no relationship between the pistons 88 and the displacement of the motors 14. McGowan’s device is a species of swash plate motor (see, for example, 2:55 and 4:55-58). The displacement of such a motor is determined by the length of the piston strokes, which, in turn, is controlled by the angle of the swash plate 36 relative to the cylinders 26. To change the displacement of McGowan’s machine, the angle of the swash plate 36 would need to be changed. The swash plate 36 is rotatably coupled to an angled portion 48 of the shaft 46 (see 4:60-5:6), and so the angle of the swash plate 36 is determined by the angle of the angled portion 48 relative to the shaft 46. There is no suggestion that the angle of the angled portion 48 can be changed, and indeed, one of ordinary skill would recognize that McGowan’s disclosed device is a fixed-displacement machine. The length of each piston stroke is always the

same, and so the displacement is always the same. Because its displacement is fixed, and does not change, McGowan has no need of a mechanism to control displacement changes, and therefore fails to anticipate claim 8. Accordingly, claim 8 is allowable over McGowan, together with dependent claims 9-18.

Claim 19 recites, in part, “a torque transferring device coupled to the shaft between the first and second pump/motors.” In rejecting claim 19, the Examiner cites McGowan’s swash plate assembly, including the sleeve 38 and spokes 40, as corresponding to the torque transfer device of claim 19. However, McGowan cannot anticipate claim 19 on this basis. The cited components serve to “convert reciprocal motion of the pistons 24 to rotational motion of the shaft” (5:17-19), where torque transfer, instead, is a transfer of rotational force from one shaft to rotation of another shaft. An example of such a device is described in the specification in the paragraph beginning at page 13, line 13. McGowan’s pistons, which receive or transmit force to the swash plate, do not rotate, but instead reciprocate. Clearly, McGowan does not provide a torque transfer device. Claim 19 is therefore allowable, together with dependent claims 20-22.

McGowan fails to anticipate claim 23, which recites, “a first pump/motor and a second pump/motor coupled together via a shaft, and a torque transferring assembly coupled to the shaft, the torque transferring assembly generating a first radial force in a first direction, the first and second pump/motors being oriented to ensure that when the first and second pump/motors stroke, they each generate a second radial force in a second direction, the second direction being opposite to the first direction.”

As explained previously with reference to claim 19, McGowan does not teach or suggest a torque transfer device. Additionally, McGowan offers no teaching with regard to the radial forces generated within the device. In particular, there is no teaching of a torque transfer device that generates a first radial force, nor that the motors each generate a radial force in opposition to the first radial force. Nor would such a relationship be inherent. One of ordinary

skill would recognize that the direction of the radial forces generated by the pistons in McGowan's machine will change constantly as the swash plate and the valve plates 66 rotate, while the swash plate, per se, does not generate any radial force. Accordingly, McGowan cannot anticipate the limitations of claim 23, which is thus allowable, together with dependent claim 24.

Claim 25 recites, in part, "coupling a torque transferring device to the input/output shaft; coupling a secondary shaft to the torque transferring device; generating a separation force in a first direction when transferring torque to the secondary shaft; and stroking the first pump/motor to generate a first radial force in a second direction and stroking the second pump/motor to generate a second radial force in the second direction, the second direction being opposite to the first direction."

McGowan fails to anticipate these limitations of claim 25. The Examiner has argued that such limitations are inherent in McGowan's operation, but applicant respectfully disagrees. As previously demonstrated, McGowan does not employ a torque transfer device in its operation, nor would such be inherent. Furthermore, McGowan does not employ any meshed gears such as would generate a separation force, nor has the Examiner pointed to any other particular feature of McGowan that would tend to generate a separation force or radial force. Even if such features were shown to exist, it would still remain to be shown that the radial forces generated were consistent with the limitations of claim 25. None of these aspects of claim 25 have been adequately shown in the prior art. Clearly, claim 25 is allowable over McGowan.

Claim 26 recites, in part, "rigidly coupling a first drive plate of a first variable-displacement pump/motor to a second drive plate of a second variable-displacement pump/motor through one or more shafts." McGowan fails to anticipate this limitation of claim 26. Instead, McGowan teaches a fixed-displacement machine. Displacement of the machines of McGowan's disclosed embodiments cannot be changed, and McGowan is silent regarding variable-displacement devices. Claim 26 is therefore allowable over McGowan.

Claim 27 recites, in part, "coupling a torque transferring device to the common shaft between the first and second pump/motors." As previously, demonstrated, McGowan does not teach a torque transfer device, and so does not anticipate this limitation of claim 27, which is therefore allowable.

In the comments presented above, only the allowability of the independent claims has been argued. Nevertheless, applicant believes that many of the dependent claims are allowable on their own merits, apart from their dependence from allowable base claims, and therefore reserves the right to submit arguments in support of such allowability if it becomes necessary at some later date.

In light of the above amendments and remarks, Applicants respectfully submit that all pending claims are allowable, and therefore request that the Examiner reconsider this application and timely allow all pending claims. Applicant further requests reentry of claims 17 and 18, currently withdrawn pending allowance of a generic claim. The Examiner is encouraged to contact Mr. Bennett by telephone at (206) 694-4848 to discuss the above and any other distinctions between the claims and the applied references, if desired. If the Examiner notes any informalities in the claims, he is encouraged to contact Mr. Bennett by telephone to expeditiously correct such informalities.

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The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

Respectfully submitted,

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